

Canada's Leopards

Leopard 2A6M CAN & LAV-III, Afghanistan

Canadian Forces took some of the lessons re-learned during Operation Medusa in Afghanistan, directly to heart. Canada's DND:

"The heavily protected direct fire capability of a main battle tank is an invaluable tool in the arsenal of any military. The intensity of recent conflicts in Central Asia and the Middle East has shown western militaries that tanks provide protection that cannot be matched by more lightly armoured wheeled vehicles.... [Canada's existing Leopard C2/1A5] tanks have also provided the Canadian Forces (CF) with the capability to travel to locations that would otherwise be inaccessible to wheeled light armoured vehicles, including Taliban defensive positions."

In October 2003, Canada was set to buy the Stryker/LAV-III 105mm Mobile Gun System to replace its Leopard C2 tanks. By 2007, however, the lessons of war took Canada down a very different path – one that led them to renew the very tank fleet they were once intent on scrapping, while backing away from the wheeled vehicles that were once the cornerstone of the Canadian Army's transformation plan. This updated article includes a full chronology for Canada's new Leopard 2 tanks, adds information concerning DND's exact plans and breakdowns for their new fleet, and discusses front-line experiences in Afghanistan...

Why New Tanks Now?

LAV-III: stuck & broken

As noted above, existing Leopard 1A5-CAN tanks (designated C2) have been a welcome addition to the fighting in Afghanistan, and their MEXAS ceramic-composite armour kits and combat engineering attachments increase their versatility. The Canadian Forces are also deploying tracked M113 armoured personnel carriers, which offer much less complete protection but similar mobility benefits.

Canada's LAV-III wheeled armoured personnel carriers have played useful roles, using their sensor suites and 25mm autocannon in road overwatch and patrols. The Panjwai district's mud-brick compounds and its irrigation ditches, however, presented the LAV-III with limits they could not easily overcome – and would have done the same for the LAV-III/Stryker MGS systems, had Canada gone ahead with that purchase.

M113A3 'TLAV,' May 2007 FOB Gundi Ghar

Canadian sources tell DID that in addition to direct fire support from the Leopard C2s' 105mm gun, the tanks'



heft and traction are equally significant because they can crumble low-lying brick walls by using front-mounted engineering attachments like dozer blades – or just their own weight. This clears a path for other forces, and allows the tanks to continue moving forward and providing fire support.

The Leopard C2s have their own deficiencies, however. The first – and biggest – issue, is heat. Temperatures in southern Afghanistan can reach 50C/122F in the summer time, which can easily become a life-threatening 65C/150F inside the vehicle due to its enclosed nature plus heat generated by the tank's hydraulic systems. Australia managed to add air conditioning to its Leopard 1s, but the Canadian version has a number of unique characteristics; any retrofit project risked delays and complications. With vehicles committed to the fight and needed in the field, however, failure was not an option.

Leo-C2: into Afghanistan

The second issue was protection. Even with its add-on MEXAS armour, the 1970s vintage Leopard 1s lack the all-around protection possible in the latest main battle tanks like the American M1 Abrams, German Leopard 2, et. al. The M1 TUSK and Leopard 2A6M versions can ignore single-warhead anti-tank rockets like the RPG-7, and can also add belly armour kits to improve protection against IED land mines.



The third issue was electronics and maintenance. Retrofitting modern digital communications and force tracking systems into tanks like the 6th generation Leopard 1 is a strain at the best of times, while 7th generation vehicles are designed and equipped to include them. In addition, by 2012 there would no longer be logistics support and spare parts for the turrets of Leopard 1s. By 2015, the Canadians believed that it may become impossible to maintain them.

Standing pat was not an option, and a simple switch had sharp limitations. With their LAV-III MGS and the combined anti-air/anti-armour LAV-III MMEV procurements in limbo, and the tactical rationale for these programs brought into question, the Canadians accepted the verdict of circumstances, and chose a different path. Instead of new 8x8 APCs, they would field new heavy armour.

Choices, Choices: Leopard 2s For Canada

Snow Leopards: C2 top, 2A6 bottom

A number of options for renewing Canada's tank capability were considered, ranging from refurbishment to surplus to new. Buying new was also examined, but delivery time was of the essence and DND's examination determined that the cost per vehicle meant paying up to 3 times as much for equivalent capability bought on the surplus heavy tank market. New systems entering the market like the CV90-120 light tank may offer full tracked mobility and similar firepower at less cost, but delivery time remains an issue and if weight is a tactical plus in theatre, their 32-ton heft may not be ideal.



Accordingly, the Canadian government approached 6 allied nations regarding surplus main battle tank sales, and received proposals from 3 of them. It then went ahead and made two purchases.

Leopard 2A6-PSO

Thanks in part to the great Deutsche Panzer Schlussverkauf (German Panzer fire sale), the Leopard 2 and its variants have been bought by Germany, Austria, Denmark, Finland, Greece, the Netherlands, Norway, Poland, Spain, Singapore, Switzerland, Sweden, and Turkey. We can now add Canada to that list.



As an interim measure to ensure the availability of air-conditioned, effective tanks on the front lines, 20 German Leopard 2A6M mine-protected tanks were leased from Germany, and delivered by the summer of 2007 to replace the current Leopard 1A5/C2 tanks in Afghanistan. Their electric turret systems produce less heat, and air conditioning will be added in theatre. The Leopard 2A6 is the most modern variant of the Leopard 2 tank, though KMW has proposed a variant called the PSO (Peace Support Operations) with improved protection and more integrated combat engineering capabilities. By the time modifications were finished, the Leopard 2A6 CAN turned out to fall somewhere between the conventional 2A6 and the PSO.

Leopard 2A4

The follow-on orders of 127 tanks were won by 3 countries. The biggest order for 100 tanks went to the Dutch, who are serving under NATO ISAF beside Canadian forces in southern Afghanistan. Training for 5 years and initial spares will also be provided. Cooperation between these nations is not new. Dutch PzH-2000 mobile howitzers have already proven very helpful during Operation Medusa, and so have their CH-47 Chinook medium-heavy helicopters – some of which were bought as surplus from the Canadians in the 1980s. The cycle continues. And so it goes.



In the aftermath of their sales to Norway, Denmark, and now Canada, The Dutch will be left with 110 Leopard 2A6-NL tanks in their arsenal [DID: dropping again to 73 if the proposed December 2007 sale to Portugal goes through].

Canada's initial 100-tank buy includes 20 Leopard 2A6-NL, and 80 Leopard 2A4s. Why 100? Because Canada's Department of National Defence believes this is the minimum fleet size to support a deployed tank squadron:

Badger AEV

40 for deployed operations. The Canadian Forces need 2 combat-ready squadrons of approximately 20 tanks each: one for deployment and a second for rotation into theatre to allow for depot repair and overhaul of the first.



40 for training. An additional two squadrons of 20 tanks each are required for collective and individual training in Canada: individual training at the Combat Training Centre at CFB Gagetown, New Brunswick and squadron training at CFB Wainwright at the Canadian Manoeuvre Training Centre in Alberta. These tanks do not need the same up-armouring conversion as the 2A6Ms, but they do need the same guns and electronics if training is to be faithful.

20 specialists. The final 20 vehicles will consist of key support vehicles such as armoured recovery vehicles (Canada's Leopard 1 version: Taurus ARV, one was deployed to Afghanistan), armoured bridge-laying vehicles (Canada's Leopard 1 version: Beaver bridge-launcher), and armoured engineering vehicles (Canada's Leopard 1 version: Badger AEV, also deployed to Afghanistan and used in preference to LAV-III engineering vehicles). On the other hand, without turrets that drive a 2015 expiration date, it may be practical for Canada to simply keep many of their existing Badger and Taurus vehicles for this role.

At one point, the 20 planned specialist vehicles were reduced to 8 ARV-3 Armoured Recovery Vehicles, and 12 vehicles used for spare parts. That thinking changed, however, and Canada ended up adding 27 more Leopard 2s from other sources.

Another 15 Leopard 2A4s were bought from Germany, to be used for spare parts. This hadn't been contemplated in the initial plan, but it was necessary. The initial set of 20 leased German Leopard 2A6Ms were experiencing readiness problems, as tanks were cannibalized in order to keep others running. A 2010 buy from Switzerland added 12 stripped Pz 87s (Leopard 2A4 variants) for conversion to specialty vehicles, under the Force Mobility Enhancement (FME) program.

Contracts & Key Events

Leopard 2A6M CAN in Afghanistan

Feb 10/11: Switzerland's armasuisse announces that the country is selling 12 surplus Pz 87 (Leopard 2) tank chassis to Canada, for conversion into specialty vehicles:

"The vehicles supplied to the Canadian Forces will be converted to support vehicles. The Pz 87 Leo are not sold in fully equipped condition. Among others, the following assemblies are removed: armament, radio-and inter-phone systems. The components which are not supplied are used as spare parts by the Swiss Armed Forces."

Dec 17/10: Rheinmetall Canada in Saint-Jean-Sur-Richelieu, Quebec announces a EUR 17 million (C\$ 22.7 million) contract to modernize and overhaul 42 Canadian Leopard 2A4 main battle tanks. By the start of 2012, the ex-Dutch tanks will be refitted to meet Canadian Army technologies and standards.

Oct 7/10: Krauss-Maffei Wegmann hands over the first of 20 Leopard 2A4M CAN battle tanks to the Canadian armed forces, during a ceremony at Bergen near Hannover, Germany. The next deployment location for the Canadian Leopards will be Afghanistan, where they will replace the Leopard 2A6Ms in theatre.

This has been a long time coming:



November 2009: Canada's Auditor General's report on the Tank Replacement Project reveals a new buy of 15 Leopard 2A4s from Germany, which were purchased act as a source of spares.

CASR:

"It is not clear whether the 15 new 'donor' vehicles are in addition to 12 "Logistic Stock Vehicles" for parts mentioned in the LOI. The OAG notes that the earlier-model Leopard C2 tanks had to be retained for use in Afghanistan because of flaws in the planning and execution of the Tank Replacement Project. From the outset of the loaned Leopard 2A6M deployment, the fleet was beset by serviceability problems. To keep the borrowed German Leopard 2A6Ms operating, CF personnel had to immediately begin cannibalizing this fleet (including the vehicles earmarked for training). The end result was reduced availability and training problems.... [In the end, 20] ex-Dutch tanks will now be refurbished in Germany, brought up to full Leo 2A6M standards, and transferred to the Bundeswehr in lieu of returned tanks. DND's Tank Replacement Project is now running 2 years behind schedule. No ex-Dutch Leopards upgraded to full 2A6M standard is likely to see Afghan service."

July 8/09: Canada's DND announces a program to create 13-18 Leopard 2 derived Armoured Engineering Vehicles, and 2-4 Armoured Recovery Vehicles, to replace its existing fleet of Leopard 1 derived Badger AEVs and Taurus ARVs. AEVs are very heavy combat engineering vehicles, while ARVs are more focused on towing heavy vehicles out of trouble or assisting with field repairs. The initial set of 15 vehicles (13 AEVs and 2 ARVs) will be acquired as options associated with Canada's Tank Replacement Project.

The second phase of the "Force Mobility Enhancement" project will add tactical mobility implements for the rest of the Leopard 2 tank fleet, including dozer blades, mine ploughs and mine rollers. The program will buy 29 sets of implements, with an option of an additional 30. The procurement process will be a competitive military off-the-shelf acquisition, and a letter of interest is likely during summer 2009. The definition phase of the project will include a solicitation of interest and qualification (SOIQ) or a request for proposals (RFP), and the contract award is expected by spring 2011. Fielding is expected to be very rapid – both the vehicles and the implements procured are expected to reach Initial Operational Capability by 2011, with Full Operational Capability expected by 2015. Canada's 100% of contract value industrial offset rules will apply.

CASR reports from direct sources that Canada is already using 2 German Bergepanzer 3/Bufel ARVs in Afghanistan, having taken the vehicles direct from Bundeswehr stocks and upgraded them. Canada refers to them as ARV-3s, since the "Buffalo" designation is already in use by a LAV-based engineering vehicle. On the AEV front, the logical and likely choice is the Rheinmetall/RUAG AEV-3 Kodiak, currently in use by the Dutch, Swiss, and Swedish armed forces.

While 2011 lies within the term limit of the present Conservative Party government, it is a minority government in uncertain economic times, and Canada is currently set to wind down its Afghan mission in 2011. Until a contract is signed, therefore, this program must be considered to be at risk.

March 10/09: Canada's Globe and Mail newspaper reports that 80 of the 100 new Leopard 2 tanks [the Leopard 2A4s] remain in storage, over a year after the formal contract with the Netherlands, 18 months after the first Leopard 2A6s were shipped to Afghanistan, and over 2

years after the initial agreement in principle. Without even a contract to get them ready for service:

“Lieutenant-General Andrew Leslie, Chief of the Land Staff, said he can not explain why he is still waiting for the badly needed tanks. ...[He] told the Senate committee on national security and defence. “They bought 100 Leopard 2s. Forty are still in Europe and 40 are currently in Montreal and they’ve been in Montreal since I believe November of last year. And I do not yet have my hands on those Leopard 2s with which to train our soldiers.”

Gen. Leslie told senators the government has yet to contract a private firm to do the upgrades required to get the vehicles into service. As a result, soldiers training in Canada must use nearly 40-year-old Leopard 1 tanks, which he said have a breakdown rate of 71 per cent.”

Leo C2s, Afghanistan

Winter 2008: The Canadian Army Journal runs an article from a Canadian officer who has returned from commanding Leopard C2 (1A5 CAN) tanks in Afghanistan. Maj. Trevor Cadieu discusses events on the ground, and lessons learned. Some excerpts:



“Elements of the ISAF Reserve Battalion were certainly relieved to see the tanks during Operation ACHILLES, especially when the Leopard mine ploughs were used to extract several of their utility vehicles and crews that had found the hard way an old Soviet minefield.... [‘A’ Squadron] has routinely been split into troop-sized elements or less and attached to each of the infantry companies. This decentralized employment of armour and extremely high temperatures has strained the sustainment concept and serviceability of the tanks... [but] The impact of this squadron has been felt as far west as the Helmand border, and north towards Ghorak and Shah Wali Kot.... Specialized weapons or concentrated attack may be capable of destroying tanks, but the survival rate of their crews is high and the protection they offer to dismounted infantry from fragmentation and blast weapons is unquestionable.

”....The 105 mm HESH round is the bread-and-butter munition for the tank squadron in theatre: each round knocks five-by-five meter holes into grape-drying huts and we have found it highly effective against dismounts at ranges of 150 to 3800 meters.... yet there has been no suggestion of civilian deaths attributed to tank fire during this entire period.... A strong case can be made that Canadian tanks have actually reduced collateral damage in the Canadian AO. We know through experience that the more combat power we commit to a mission, the less kinetic that operation is likely to become.

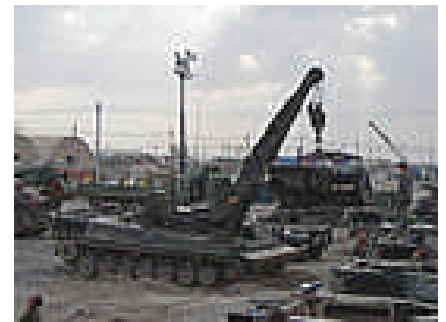
”....Although tanks provide increased firepower, protection and mobility to the BG, they are extremely vulnerable when operating independently in a COIN environment.... The enemy in direct confrontation on the objective has killed very few Canadian soldiers in Afghanistan. It is on the way to the fight that our troops have been more regularly maimed and killed by mines, IEDs and fanatical suicide bombers. Tanks, with their superior armoured protection and mobility, have led as a default during all moves in both open and close terrain.... The notion of grouping the different arms to benefit from their collective strengths is not new, but it has again been validated in combat.”

*Leopard C2 with dozer,
FOB Ma'Sum Ghar*



”....A common misconception is that the tank is primarily an anti-armour platform. This is false, especially in the environment in which we currently find ourselves fighting.... Equipped with a dozer blade, mine roller and mine plough in each troop of four tanks, the Leopard fleet of vehicles has restored tactical mobility to the combined arms team in Afghanistan through its ability to penetrate grape and marijuana fields, clear mine and IED belts and breach mud walls and compounds that were previously impassable to the LAV III... [which made] it more difficult for the enemy to sight defensive positions, while decreasing the risks to less protected coalition soldiers.... The enemy was kept off-balance... and the tanks were able to form a “ring of steel” around the infantry as they conducted deliberate clearance operations in urban areas. Both tank squadrons have used the dozer blades and ploughs extensively to conduct hasty and deliberate minefield breaches and break into complex terrain in order to destroy the enemy and extract personnel and vehicle casualties... [Having said that,] there is no system on the battlefield that has the capacity to neutralize without exception all mine/IED threats.... IEDs have occasionally detonated on impact with the implement, rendering it ineffective. A Squadron 2 RCR BG has used effectively the tank rollers.... [but that won't help against] command detonated and remote-control detonated IEDs. Further, the rollers take considerable time to mount, they require a larger turning radius and they keep us on the tight, canalizing roads of Afghanistan – exactly where the Taliban prefer to plant mines and IEDs.”

Taurus ARV, at work



”....The only guarantee when employing armour in the harsh environment of Afghanistan is that tanks will break. Their timely recovery from the battlefield is dependent on the immediate availability of other armoured assets mounted on the Leopard chassis.... maintenance deficiencies skyrocketed when the sub-unit operated in more than two locations at once. Without qualified technicians available to provide timely and responsive support to all deployed elements, proactive maintenance was neglected and vehicle serviceability suffered as a result. Of greater concern was that tanks actually became a liability to infantry soldiers when this valuable resource was too thinly spread across the BG.... Tanks, regardless of their vintage, are extremely maintenance-intensive and they possess an insatiable appetite for combat supplies and commodities. Recognizing the sustainment demands of the Leopard fleet of vehicles, the National Support Element (NSE) deployed to Afghanistan has allocated to the tank squadron a dedicated echelon.... None of the other arms have been allocated a dedicated echelon in Afghanistan.”

The article goes to describe the sequential steps that led to the Canadian Leopard C2 deployment, and stresses, again, the key role of support echelons:

“While the image of a Leopard tank rolling off the back of a C-17 is perhaps more appealing to the media, the first chinks into theatre should be filled with the armoured recovery assets, mobile repair team vehicles, specialty tooling and POLs, and sufficient spare parts for 30 days of operations. Without these critical parts and combat supplies identified, received and organized at KAF, the tanks are useless.”

Oct 2/08: Leopard manufacturer Krauss-Maffei Wegman issues a release that discusses Canada’s field experiences in Afghanistan:

”[The 2A6 model’s extra mine-protection] proved its worth in November, 2007, when the Taliban attacked a Canadian Leopard 2A6M-CAN with a large booby trap. The tank did sustain damage, but the entire crew survived. The Canadians had purchased the tank from the German federal army’s inventory. The Canadian commander wrote a letter of thanks to the German ministry of defence, emphasizing that survivors would have been highly unlikely in any other vehicle. Canadian Chief of Staff General Rick Hillier also pointed out that the Leopard 2A6M had not been destroyed, but was indeed back in operation after repairs.

Denmark is another country that has opted for the Leopard 2 to support its troops in the UN ISAF mission. Their Leopard 2A5-DK models proved their worth in January this year while supporting British troops in armed conflicts against the Taliban.”

March 19/08: Canada’s plans for its new Leopard tanks are now clearer. Germany will be offered 20 of the Dutch Leopard 2 A6NLs, converted to match German equipment and standards, as replacements for their loaned tanks in Afghanistan. This allows Canada to keep the German tanks in Afghanistan, and saves a great deal of money on shipping. Another 20 Dutch tanks might be upgraded to Leopard 2 A6M CAN standard (creating a force of 40), but a final decision has yet to be made.

Of the 80 Leopard 2A4 tanks, the 40 training tanks will receive a longer L55 120mm smoothbore gun like the Leopard 2A6M, but not the additional armour. The number of these Leopard 2 A4+ tanks in Canada’s inventory may rise to 60 if Canada decides not to have 40 2A6M CAN models right now, and elects to leave the add-on armour and remaining 2A6M conversion as a pre-deployment option.

The remaining 20 Leopard 2 A4s will see 8 converted to Bergepanzer 3/ Buffel Armoured Recovery Vehicles: 2 deployable, 2 in reserve, and 4 for training. These vehicles can be used to tow Canadian armoured vehicles out of trouble, and can perform light combat engineering. The other 12 tanks will be used as sources of spares.

Dec 14/07: Canada signs a formal purchase agreement with the Netherlands for 100 Leopard 2 battle tanks. The ceremony is held at the De Salaberry Armoury in Gatineau, Quebec, near the capital city of Ottawa. The Canadian Forces release once again offers a breakdown of 40 deployable, 40 training, and 20 specialty vehicles (“i.e. tanks for laying bridges, armoured repair vehicles and armoured engineering vehicles.”).

Kandahar: Leo 2A6 arrives

Aug 16/07: The first leased German Leopard 2A6M tanks arrive in Afghanistan, carried in on a leased AN-124 aircraft

July 25/07: “Canadians train on the Leopard 2A6M” discusses ongoing training in Munster, Germany for Canada’s future Leopard



2A6M crews. Training actually began in May 2007 and Germany will be the training site for Canada's next 2 deployment rotations to Afghanistan.

April 12/07: Canada and the Netherlands announce an agreement in principle for 100 tanks. At this point, Canada's Department of National Defence is still negotiating government-to-government agreements with Germany and the Netherlands, and expects to pay C\$ 650 million (then about \$570 million) for the lease, the purchase, required "Canadianization" upgrades, and initial spare parts. The money will come "from existing departmental allocations," which in all likelihood means the monies once set aside for wheeled LAV-III variants. The German Leopard 2A6Ms were sent to Afghanistan in Summer 2007.

Once negotiations are complete, the DND statement said that that Dutch Leopard 2 tanks will be transported to Canada, for necessary upgrades to final Canadian Forces standards. That standards set is unclear at this point, and could resemble Leopard 2A6 Peace Support Operation standards that add combat engineering, improved armour, and other enhancements well-suited for operations in Afghanistan. It is also unclear how many of the Leopard 2A4 tanks could end up being converted into ARV-3 Bergenpanzer Armoured Recovery Vehicles, AEV-3 Kodiak Armoured Engineering Vehicles, et. al.

This process presents a pair of industry opportunities: upgrade work, and long-term support of the new Canadian Leopard 2 fleet. The Canadian DND expects to issue RFPs in these areas once government-government negotiations are complete. Industrial offsets will be expected from foreign bidders